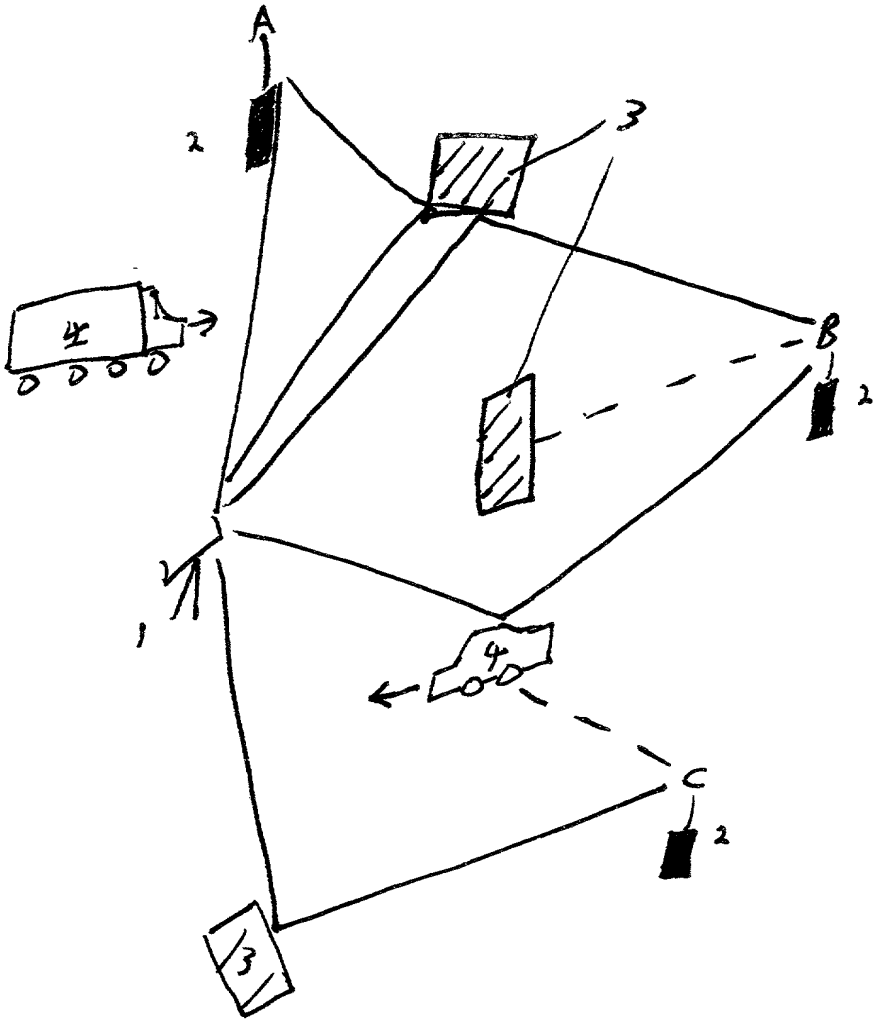


Fig 1

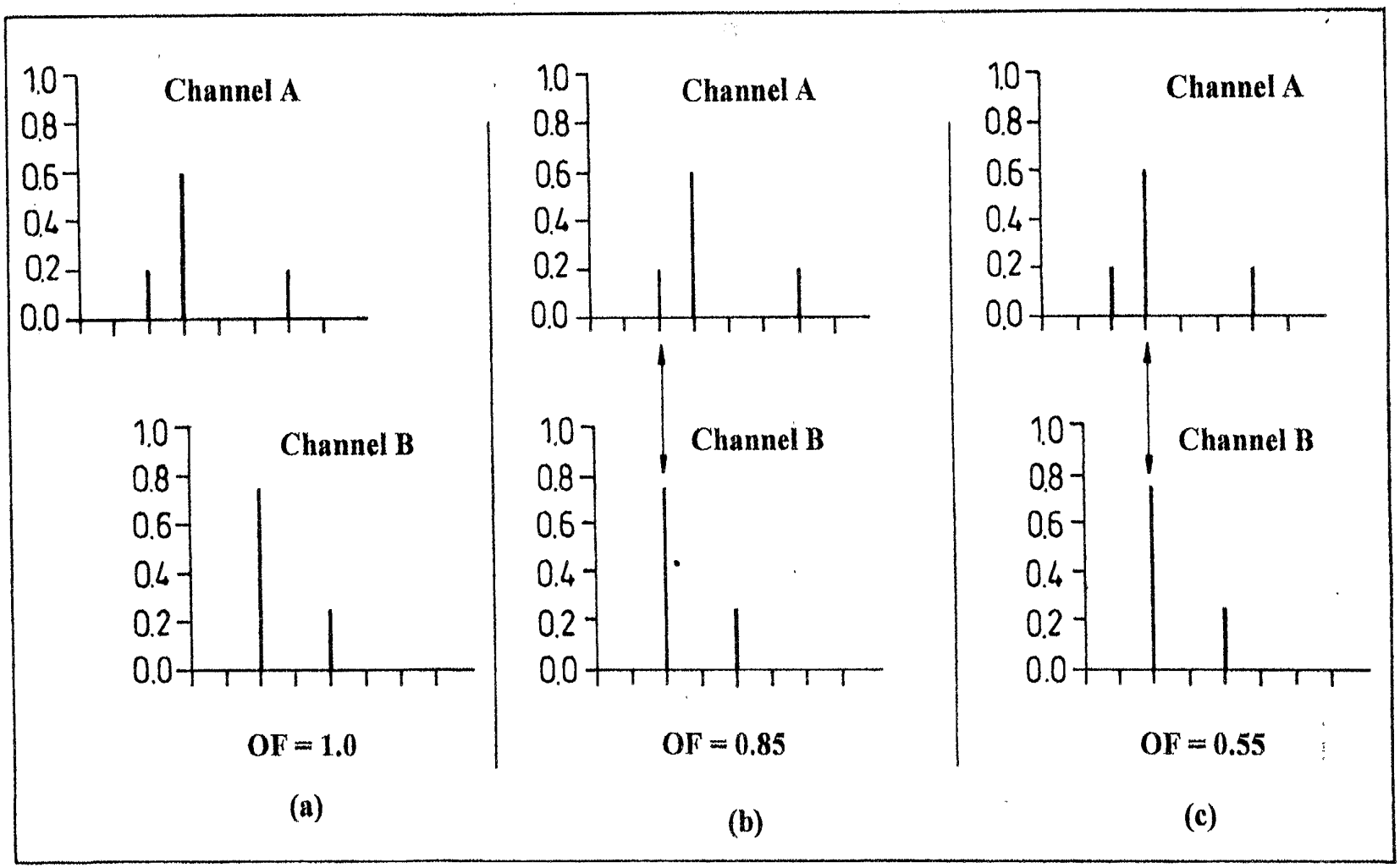


Fig. 1

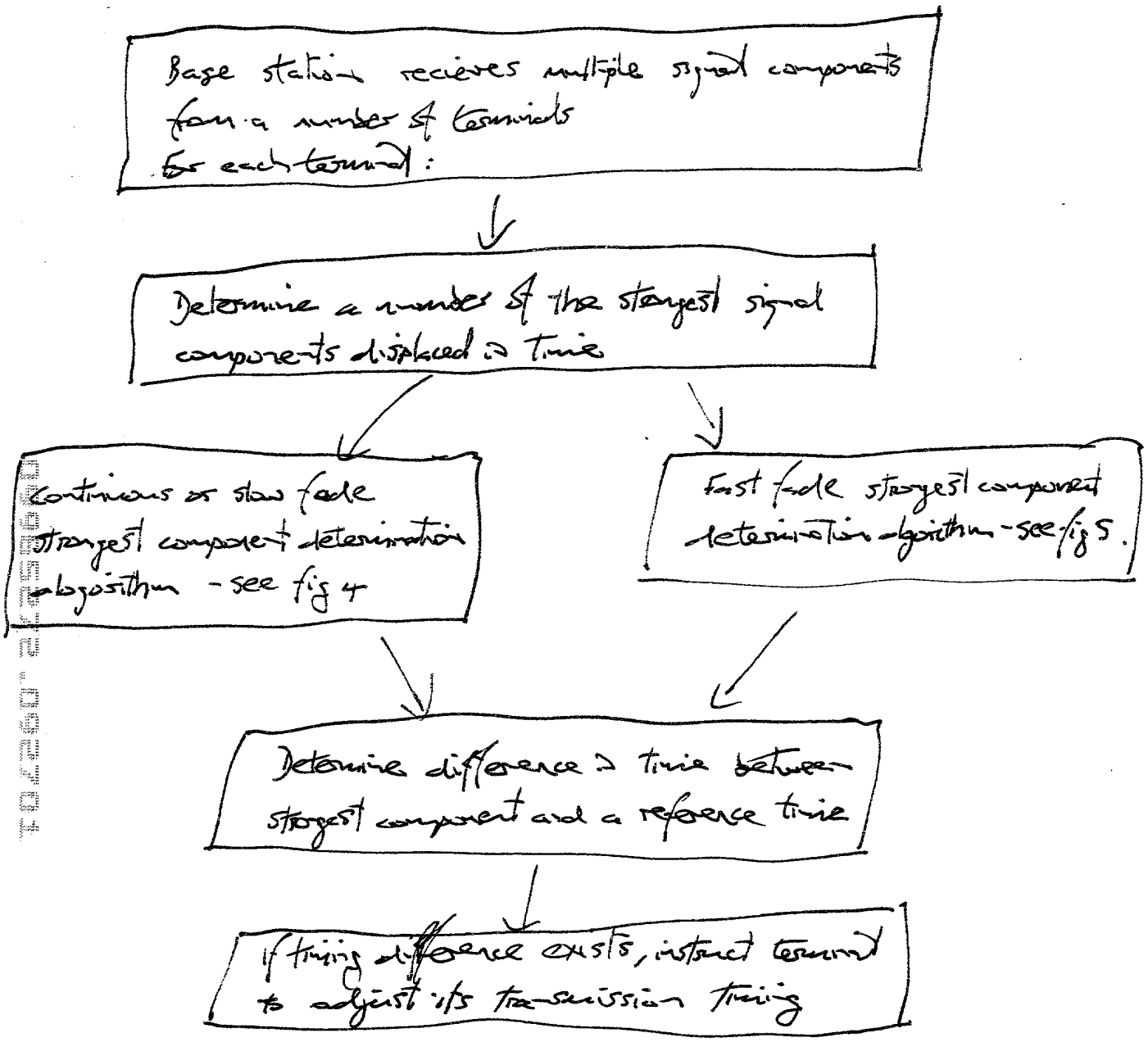

Base station recieves multiple signal components from a number of terminals
For each terminal:
Determine a number of the strongest signal components displaced in Time
Continuous or slow fade strongest component determination algorithm - see fig 4
Fast fade strongest component determination algorithm - see fig 5.
Determine difference in time between strongest component and a reference time
If timing difference exists, instruct terminal to adjust its transmission timing

fig 3

Fig 4.

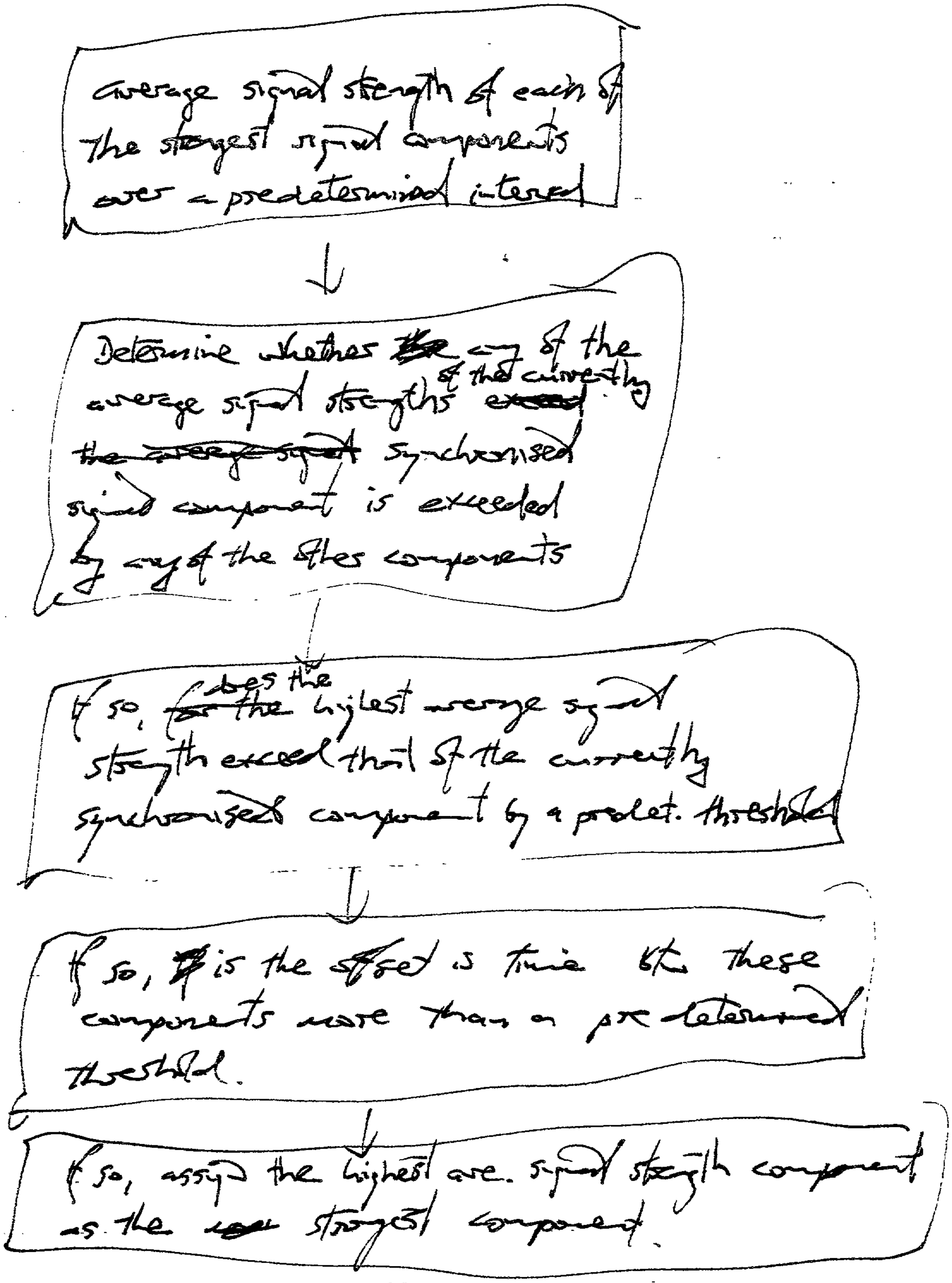
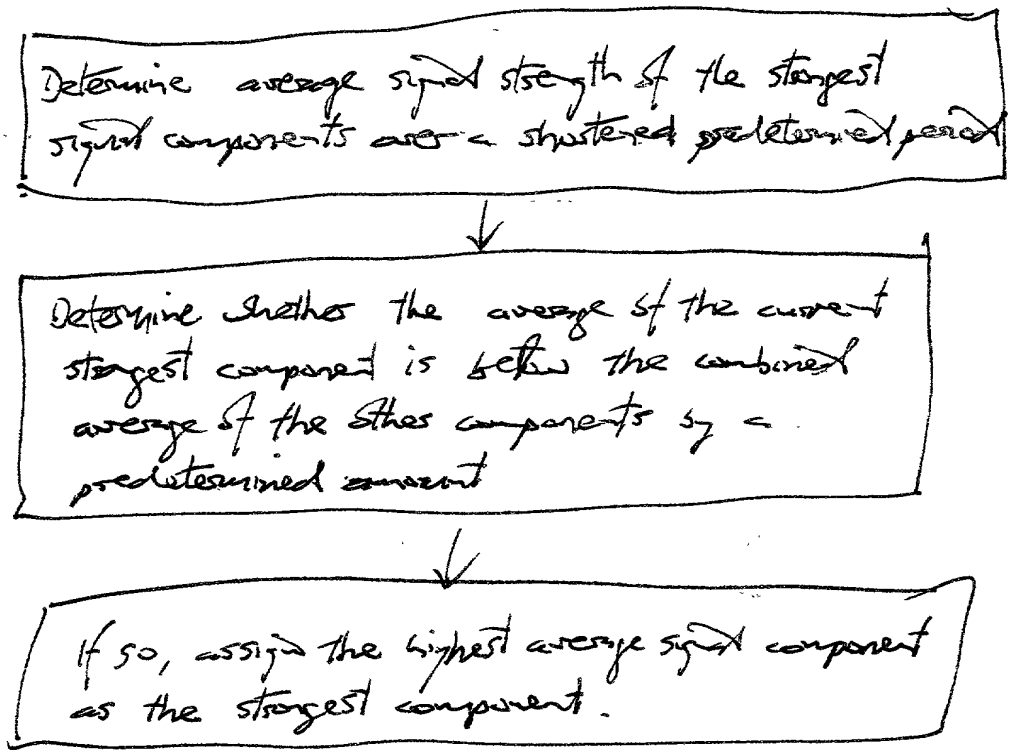

average signal strength of each of the strongest signal components over a predetermined interval
Determine whether any of the average signal strengths of the currently synchronised signal component is exceeded by any of the other components
If so, does the highest average signal strength exceed that of the currently synchronised component by a predet. threshold
If so, is the offset in time btw these components more than a pre-determined threshold.
If so, assign the highest ave. signal strength component as the strongest component.

Fig 5.


Determine average signal strength of the strongest signal components over a shortened predetermined period
Determine whether the average of the current strongest component is below the combined average of the other components by a predetermined amount
If so, assign the highest average signal component as the strongest component.

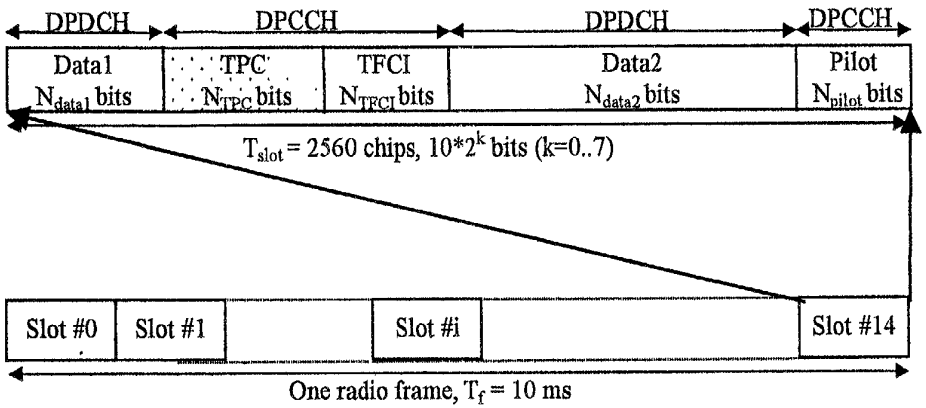


Figure 6a

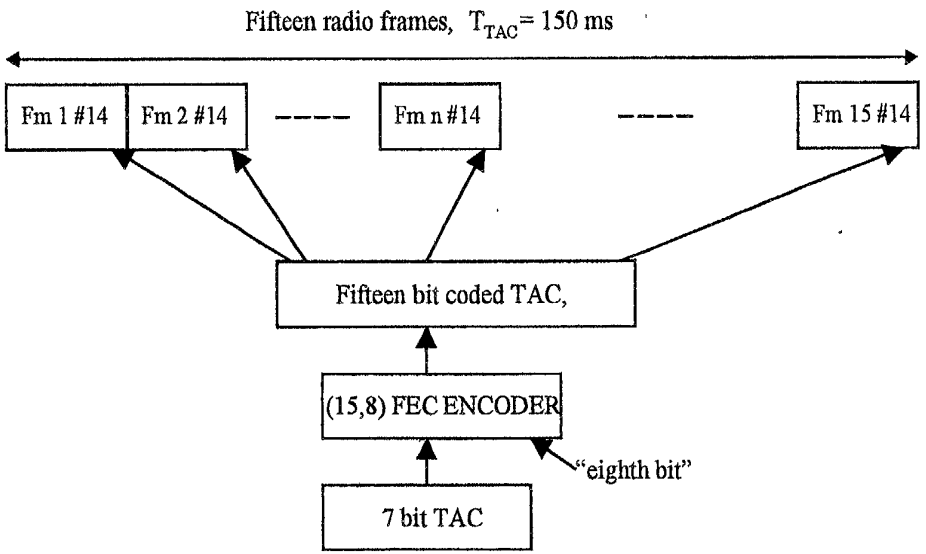

Fifteen radio frames, T_{TAC}= 150 ms
Fm 1 #14
Fm 2 #14
Fm n #14
Fm 15 #14
Fifteen bit coded TAC,
(15,8) FEC ENCODER
"eighth bit"
7 bit TAC

Figure 6b

7 bit TAC	function
0000000	do nothing
0000001	if this is the only weighted bit set - advance time by table entry 0 (default 1/8 chip , tracking mode) if this is set in combination with other weighted bits - advance time by table entry 1 (default 1/4 microsecond)
0000010	advance time by table entry 2 (default 1/2 microsecond)
0000100	advance time by table entry 3 (default 1 microsecond)
0001000	advance time by table entry 4 (default 2 microseconds)
0010000	advance time by table entry 5 (default 4 microseconds)
0100000	advance time by table entry 6 (default 8 microseconds)
1000000	do nothing
1000001	if this is the only weighted bit set - retard time by table entry 0 (default 1/8 chip , tracking mode) if this is set in combination with other weighted bits - retard time by table entry 1 (default 1/4 microsecond)
1000010	retard time by table entry 2 (default 1/2 microsecond)
1000100	retard time by table entry 3 (default 1 microsecond)
1001000	retard time by table entry 4 (default 2 microseconds)
1010000	retard time by table entry 5 (default 4 microseconds)
1100000	retard time by table entry 6 (default 8 microseconds)

Figure 6c

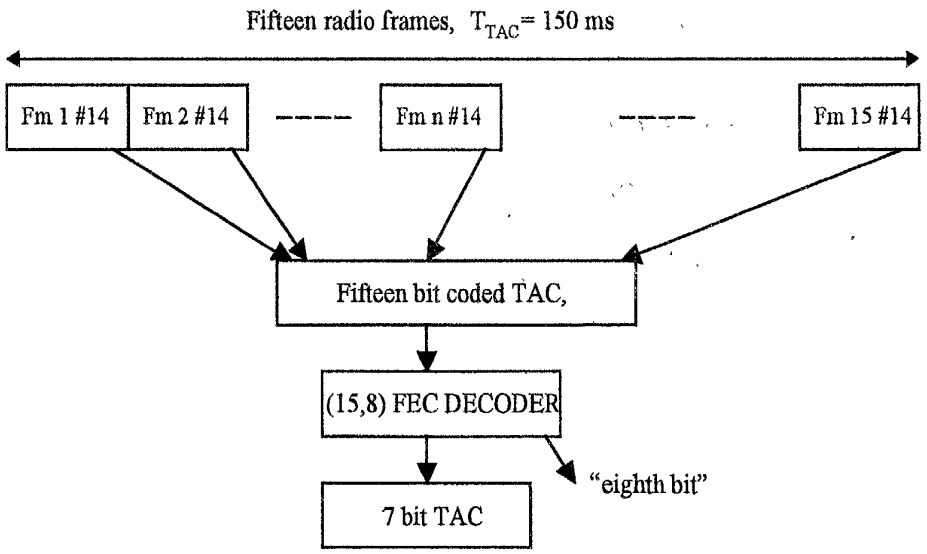

Fifteen radio frames, T_{TAC}= 150 ms
Fm 1 #14
Fm 2 #14
Fm n #14
Fm 15 #14
Fifteen bit coded TAC,
(15,8) FEC DECODER
"eighth bit"
7 bit TAC

Figure 6d

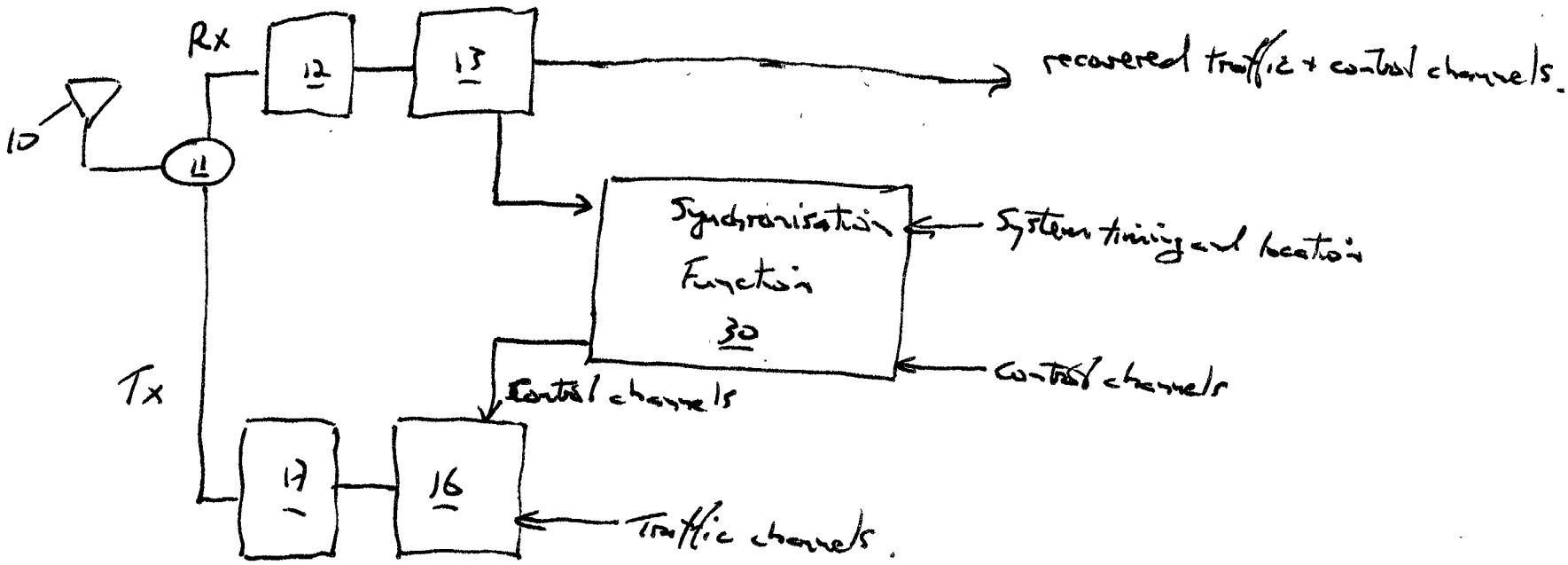


Fig 7

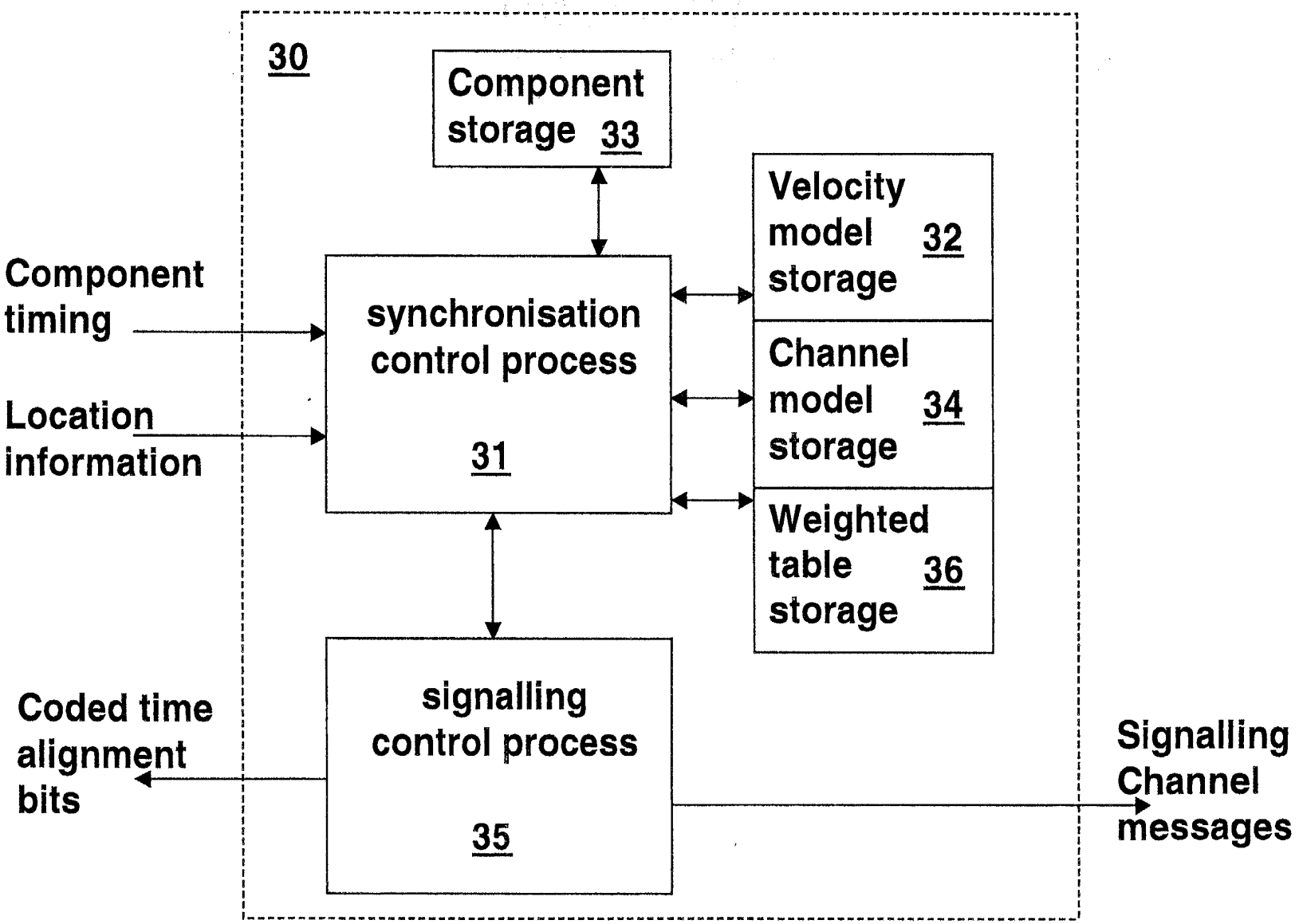
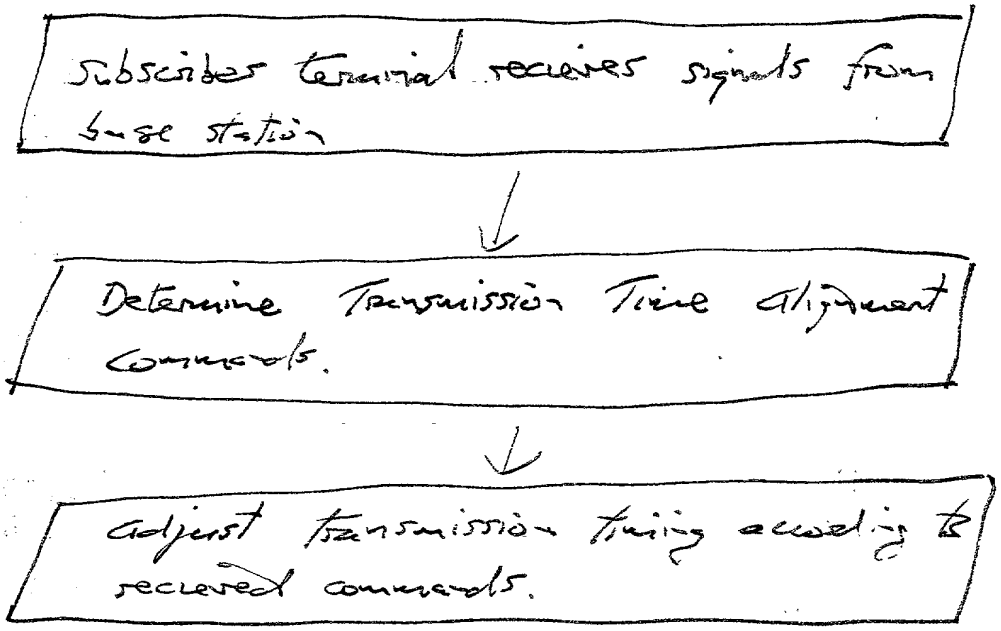

30
Component storage 33
Velocity model storage 32
Component timing
synchronisation control process
31
Location information
Channel model storage 34
Weighted table storage 36
Coded time alignment bits
signalling control process
35
Signalling Channel messages

Figure 8

Fig 5.


Subscriber terminal receives signals from base station
Determine Transmission Time Alignment Commands.
Adjust transmission timing according to received commands.

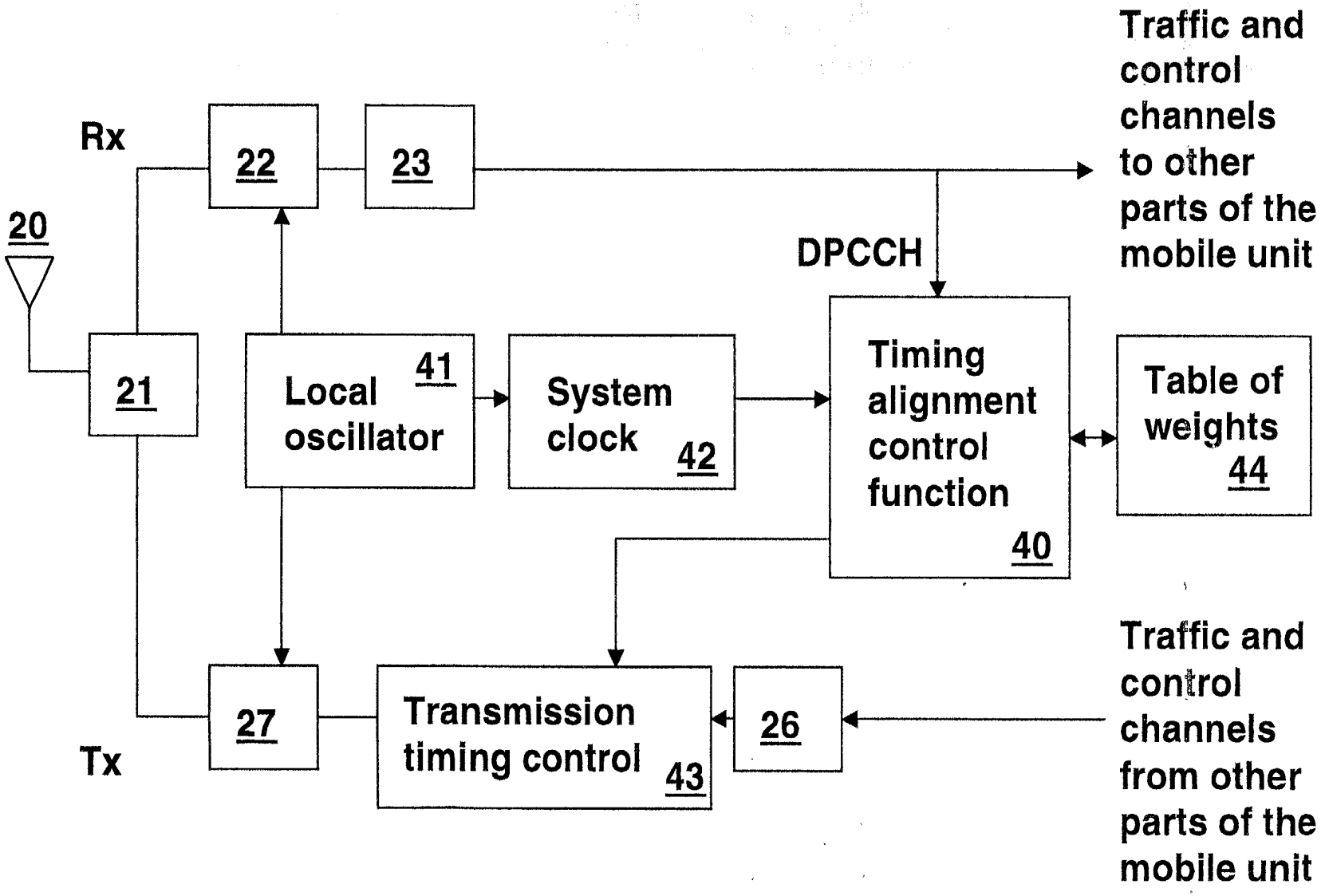

Rx
22
23
Traffic and control channels to other parts of the mobile unit
20
DPCCH
21
Local oscillator
41
System clock
42
Timing alignment control function
40
Table of weights
44
27
Transmission timing control
43
26
Tx
Traffic and control channels from other parts of the mobile unit

Figure 10

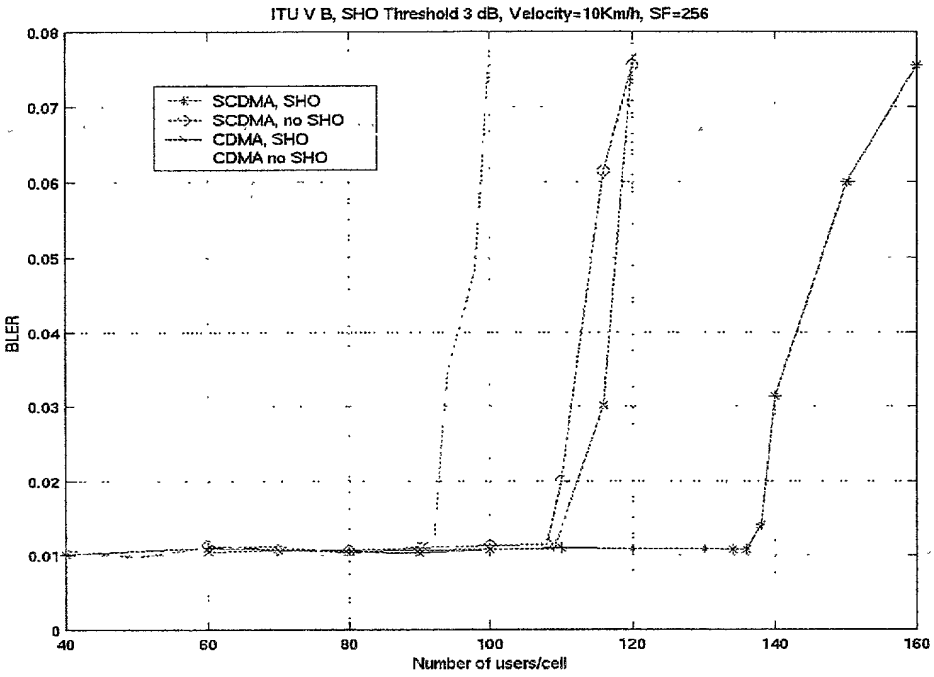


Figure 11a: Channel model: ITU Vehicular Channel B, Velocity 10 Km/h, SHO threshold: 3dB

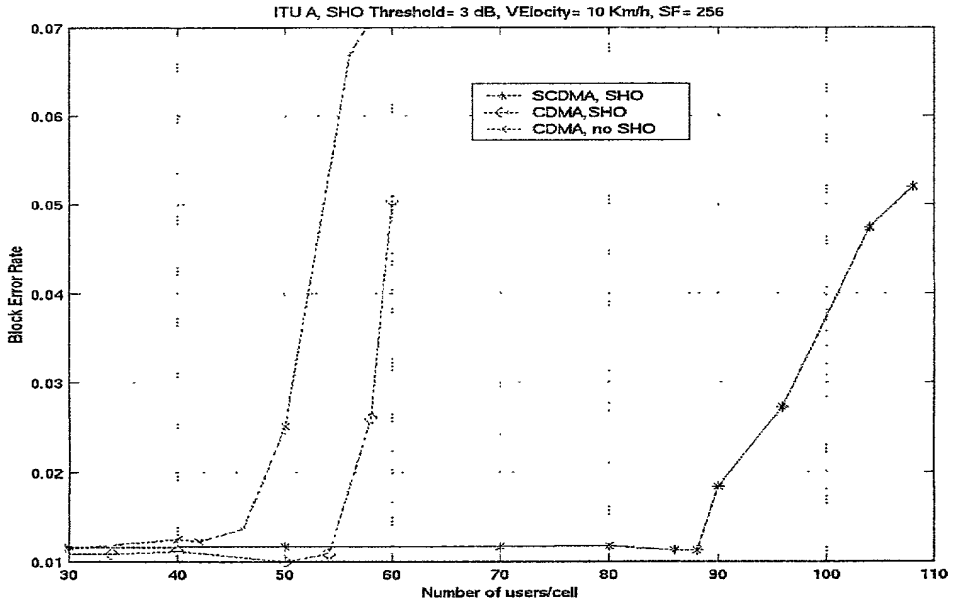


Figure 11b: Channel model: ITU Outdoor-Indoor Ch A, Velocity 10 Km/h